

Case Report

Phyto dermatitis Presenting as Second-degree Burn-like Injury due to the Application of *Ranunculus constantinopolitanus* as a Folk Remedy

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Abstract

Observations: *Ranunculaceae* is a large and varied family of herbaceous perennials consisting of approximately 66 genera and 2000 species. Members of the family are distributed throughout the world, but are found mainly in temperate to cold regions. Certain members of *Ranunculaceae* family in Turkey are important herbs in traditional medicine that have been especially used in poultices form to relieve articular joint pain. The plants in this family contain some extracts such as ranunculin and protoanemonin, which may cause severe irritant contact dermatitis. We report a rare case of phyto dermatitis presenting as second-degree burn-like injury in a 60-year-old woman. This was caused by the application of the poultices of a member of the *Ranunculaceae* family, *Ranunculus constantinopolitanus*, as a folk remedy to relieve knee pain.

Introduction

Continuously increasing enthusiasm for traditional natural therapy and alternative remedies has led to a more widespread usage of plant derived materials in treatment and healthcare. Cutaneous side effects occurred due to plants and their derivatives are not uncommon [1]. Plant-induced dermatitis may have variable clinical manifestations and differential diagnosis is not always easy. Therefore, carefully detailed history and physical examination should be necessary to elucidate the possible source(s) of the exposure and also the type of adverse reaction, that is allergic or irritant [1,2]. Certain members of *Ranunculaceae* family are important herbs in traditional medicine that have been especially used in poultices form to relieve knee pain [2, 3, 4, 5, 6]. *Ranunculus constantinopolitanus* is a multi-annual herb that belongs

to *Ranunculaceae* family and exerts highly strong irritant activity on the skin [4].

Here, we report a rare case of phyto dermatitis presenting as second-degree burn-like injury due to the application of *Ranunculus constantinopolitanus* as a folk remedy to relieve knee pain.

Case Report

A 60-year-old woman was admitted to our outpatient clinic with painful open wound on her left knee. Seven days before her admission, she had applied plant paste on her left knee and covered it with occlusive bandages for treating the pain. After five hours, erythematous and vesicubullous lesions had occurred which became worse and ulcerated within a week. She had been given topical nitrofurantoin cream by her family physician for this lesion. However, this treatment did not improve her condition. The patient stated that this was the first time the plant had been applied and



Figure 1. A) Clinic appearance of the crusted large ulcer on the left knee; B) Complete closure of the ulcer occurred at the end of 2 weeks.

she denied any history of previously applying another cream. Dermatological examination during the admission revealed crusted, large superficial ulcer on left knee (**Figure 1a**). The patient's complaints were started within the hours of applying the plant and the lesions were limited to the applied area. Therefore we considered the diagnosis of irritant phytodermatitis. To make the diagnosis definite, we suggested the patient apply the suspicious plant again. As the patient did not accept, we could not performed a patch test with the plant material. Prophylactic systemic antibiotic, oral non-steroidal anti-inflammatory drug and a systemic antihistamine treatment were initiated. After the wound was irrigated with saline and debris removed, closed dressing was applied daily with parafin gauze. The wound was treated with the complete improvement of the ulcer with punctate hyperpigmentation in two weeks (**Figure 1b**) and the patient was discharged from hospital. The plant sample was identified as *Ranunculus constantinopolitanus* (**Figure 2**) by the Science Faculty, Botanic Department of Süleyman Demirel University.

Discussion

Alternative herbal remedies are widely used for the treatment of various diseases and often contain highly active pharmacological compounds. Advantage of these non-medical practices are controversial and can have unexpected results [7].

The *Ranunculaceae* is a large and varied family of herbaceous perennials consisting of approximately 66 genera and 2000 species. Members of the family are distributed throughout the world, but are found mainly in cold regions of the earth [8]. Certain members of *Ranunculaceae* family are used by many people in various conditions such as abscess drainage, blister formation, hemorrhoids, burns, lacerations and abrasions as poultices, and herbal remedies for myalgia and



Figure 2. *Ranunculus constantinopolitanus*

common cold [5]. The plants belong to *Ranunculaceae* family exert strong irritant effect on skin and mucous membranes via their extracts ranunculin and protoanemonin glycoside [3, 8]. The pharmacological effects of these ingredients have not been studied extensively, but ranunculin was previously reported to exhibit cytotoxic effect against KB cells by inhibiting DNA polymerase [9]. Ranunculin is an acrid glycoside that especially found in the leaf and root of the plant. In newly damaged plant tissue, it is enzymatically broken down to protoanemonin that polymerizes rapidly to anemonin, an innocuous substance. Protoanemonin is volatile and extremely irritant oil that exhibits antimetabolic activity in plant [3, 9]. As a result of skin contact, it produces subepidermal disjunction and bulla formation by disrupting sulfur bridges. Destructive and irritant effect of protoanemonin is considerably more in the fresh form of plant. The dried or the boiled plants do not contain protoanemonin [3, 5]. *Ranunculus constantinopolitanus*, a member of *Ranunculaceae* family, is an important herb in traditional medicine in Turkey. The most commonly reported cutaneous adverse effect is profound skin irritation and ulceration following the deliberate application of the plant material to the skin in the self-treatment of arthritic joint pain [4]. To our best knowledge, this is the second report of phytodermatitis due to *Ranunculus constantinopolitanus* in the literature. The same plant was described by Köse et al. as a cause of burn-like reaction in nine patients, which applied bruise plant material to their knees for the same indication [4]. Although plants in *Ranunculaceae* family are used in the world for various conditions, all cases associated with phytodermatitis or chemical plant burn have been reported from

different parts of Turkey, because these plants are frequently used as a folk remedy in Turkish population for articular pain [2, 3, 4, 5, 6].

There is relatively little controversy with respect to the term of this entity. Although some authors have used the term “phytodermatitis” to describe this condition [4, 5, 6], others have used the term “chemical burn” [3]. According to us, for the lesion seen in our case, using the term “chemical burn” is not true and it should be named as phytodermatitis.

As a result, phytodermatitis caused by *Ranunculus* species is not well documented and there are very limited reports in dermatological literature. We would like to share our experience with our colleagues via representing phytodermatitis due to *Ranunculus constantinopolitanus* manifesting second-degree burn-like injury.

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